REMARKS

In the Office Action, dated September 15, 2004, the Examiner states that Claims 19-26, 28 and 30-36 are pending and Claims 19-26, 28 and 30-36 are rejected. By the present Amendment, Applicant amends the claims.

In the Office Action, Claims 19-23, 26, 28, 30-32 and 35-36 are rejected under 35 U.S.C. §112 first paragraph as containing subject matter not enablingly described in the specification. The rejection under 35 U.S.C. §112 applies to Claim 19 and its dependent claims, but should not apply to the other two independent Claims 24 and 33. The rejection relates to three aspects of Claim 19, namely:

(1) What are the "non-diffracting gray scale region **structure types**";

(2) What specific **structures** are included in the "predefined group"; and

(3) What are the **"physical characteristics"** that provide "a particular level of diffuse scattering of incident light".

The wording of Claims 19 and 26 have been amended to reflect exactly the wording which is given in the specification at page 5 lines 24-25. Thus the claims now refer to a limited number of structure types, rather than to a predefined group of structure types.

In the field of micrographic devices, the meanings of the terms "diffractive structure", "specularly reflecting structure" and "diffuse scattering structure" are known. All relate to three-dimensional surface relief structures. A "specularly reflecting" structure reflects incident light, and therefore appears bright to an observer from any direction. A "diffractive structure" has periodical elements such as regularly spaced grooves or projections, with the spacing between elements being such as to interact with incident light to cause a diffractive effect. Thus a diffractive structure appears to a viewer to be bright when viewed from particular viewing angles relative to the incident light, but dark when viewed from other angles. A diffractive structure may also have associated with it particular colour effects. A "diffuse scattering" structure is

one in which incident light is dispersed by the structure, so that the structure appears to be dark when viewed from any angle.

The present invention involves adjusting the degree of "diffuse scattering" caused by individual structures, and thereby creating a "palette" of different structures which have different diffuse scattering characteristics so they appear to be different "darknesses" when viewed form any angle. The "palette" could, for example, consist of 16 different structures with different "darknesses" or gray-scale values, ranging from dark to bright. The structure types from the "palette" could then be used to create a macroscopic image derived from of an array of microscopic regions in which each region possesses one of the structure types and represents one pixel in the macroscopic image.

With reference to the rejection's specific points of contention, please note that the nature of the "non-diffracting gray-scale structure types" is clearly discussed at page 5 lines 23 to 30. Methods for varying the diffuse scattering and associated gray-scale characteristics are given at page 6 line 6 to 13. Thus the specification gives clear guidance as to how the group of structure types can be generated. An example of a suitable structure is given in Figure 3. Diffuse scattering is achieved In the illustrated example by means of irregularly shaped indentations. As indicated at page 6 line 6 to 13, the diffusion characteristics and gray scale value can be altered by varying the depth of the structure, sharpness of the structure profile, and introduction and removal of random "noise" structures by varying the number of scattering centres and feature sizes of the scattering centre. Thus 8 different variations of the microscopic structure illustrated in Figure 3 could give 8 different corresponding gray-scale intensities in an image generated by an array of a plurality of the microscopic structures.

With regard to the issue of what specific structures are included in the "predefined group", the example given at page 6 lines 6 to 13 uses the same image (Fig 2, converted into the structure type of Fig 3) to create all of the structure types in the group.

With regard to the "physical characteristics" that provide "a particular level of diffuse scattering of incident light", please note the examples of these specified at page 6 lines 9 to 12.

In the Office Action, Claims 19-26, 28 and 30-36 are rejected under 35 U.S.C. §103(a) as being unpatentable over Lee (US 5,825,547) in view of Solmsdorf (US 5,808,578). The Applicant respectfully disagrees with and traverses this rejection.

Lee (the present inventor's earlier patent) does make mention of "diffusely reflecting regions" and "specularly reflecting regions" as the rejection has pointed out, and column 7 lines 42 to 44 state that "Diffusely reflecting regions may be used to encode auxiliary information not found in the diffraction image." However, there is nothing in US 5,825,547 to suggest that a gray-scale image can be formed from diffusely reflecting regions.

The definition of "gray-scale" given at Dictionary.com is a follows:

1. Composed of (discrete) shades of grey. If the pixels of a grey-scale image have N bits, they may take values from zero, representing black up to 2^N-1, representing white with intermediate values representing increasingly light shades of grey. If N=1 the image is not called grey-scale but could be called monochrome.
2. A range of accurately known shades of grey printed out for use in calibrating those shades on a display or printer.

There is nothing in US 5,825,547 to suggest that the properties of diffusely reflecting regions could be varied create different intensities which could be used to create a gray-scale macroscopic image.

The rejection has suggested with respect to Patent 5,824,547 that "graphical microwriting (13, Figure 9, column 8, lines 15-34) may be embossed and formed in between the diffraction regions of the diffraction tracks, which correspond to another form of non-diffraction gray scale regions". However, once again there is nothing to suggest that the properties of regions bearing

graphical microwriting could be varied to create different intensities which could be used to create a gray-scale macroscopic image.

The rejection has conceded that US 5,825,547 does not disclose the key features of grey-scale regions, and the combination of such regions to create a macroscopic graphic, line art or text image. However, the rejection has suggested that the feature of different levels of diffusing characteristic or gray scale is "either inherently met by the disclosure" or "would have been obvious to one skilled in the art". The Applicant respectfully submits that neither of these suggestions is correct. In the context of US 5,825,547, "diffusely reflecting regions" are simply regarded as dark regions. There is no contemplation of the possibility that there could be different degrees of "darkness".

With regard to the generation of a macroscopic graphic, line art or text image, the rejection has referred to Solmsdorf. However, in Solmsdorf, the diffusely scattering regions in any one device all appear to have the same characteristics, and they require the addition of optically variable (diffractive) regions to create a macroscopic image. Thus Solmsdorf does not appear to disclose anything more than is already disclosed in US 5,825,547.

In light of the foregoing response, all the outstanding objections and rejections are considered overcome. Applicant respectfully submits that this application should now be in condition for allowance and respectfully requests favorable consideration.

Respectfully submitted,

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